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# Informatics Engineering and Information Science

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## Message from the Chair

The International Conference on Informatics Engineering and Information Science (ICIEIS 2011)—co-sponsored by Springer—was organized and hosted by Universiti Teknologi Malaysia in Kuala Lumpur, Malaysia, during November 14–16, 2011 in association with the Society of Digital Information and Wireless Communications. ICIEIS 2011 was planned as a major event in the computer and information sciences and served as a forum for scientists and engineers to meet and present their latest research results, ideas, and papers in the diverse areas of digital information processing, digital communications, information security, information ethics, and data management, and other related topics.

This scientific conference comprised guest lectures and 210 research papers for presentation over many parallel sessions. This number was selected from more than 600 papers. For each presented paper, a minimum of two reviewers went through each paper and filled a reviewing form. The system involves assigning grades to each paper based on the reviewers' comments. The system that is used is open conference. It assigns grades for each paper that range from 6 to 1. After that, the Scientific Committee re-evaluates the paper and its reviewing and decides on either acceptance or rejection.

This meeting provided a great opportunity to exchange knowledge and experiences for all the participants who joined us from all over the world to discuss new ideas in the areas of data and information management and its applications. We are grateful to Universiti Teknologi Malaysia in Kuala Lumpur for hosting this conference. We use this occasion to express thanks to the Technical Committee and to all the external reviewers. We are grateful to Springer for co-sponsoring the event. Finally, we would like to thank all the participants and sponsors.

Azizah Abd Manaf

# Preface

On behalf of the ICIEIS 2011 conference, the Program Committee and Universiti Teknologi Malaysia in Kuala Lumpur, I have the pleasure to present the proceedings of the International Conference on Informatics Engineering and Information Science' (ICIEIS 2011).

The ICIEIS 2011 conference explored new advances in digital information and data communications technologies. It brought together researchers from various areas of computer science, information sciences, and data communications to address both theoretical and applied aspects of digital communications and wireless technology. We hope that the discussions and exchange of ideas will contribute to advancements in the technology in the near future.

The conference received more than 600 papers of which 530 papers were considered for evaluation. The number of accepted papers 210. The accepted papers were authored by researchers from 39 countries covering many significant areas of digital information and data communications. Each paper was evaluated by a minimum of two reviewers.

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